

TWO NEW SPECIES OF *MYRMELEON* LINNAEUS, 1767 (NEUROPTERA:  
MYRMELEONTIDAE) FROM CHINA, WITH A KEY TO  
CHINESE SPECIES

BAO RONG AND XINLI WANG

Department of Entomology, China Agricultural University, Yuanmingyuan West Road,  
Beijing 100094, China (e-mail: brbrong@yahoo.com.cn).

---

*Abstract.*—Two new species of the genus *Myrmeleon* Linnaeus, 1767, from China are described, *M. circulis* and *M. trigonois*. A key to the known species of *Myrmeleon* from China is presented.

*Key Words:* Neuroptera, Myrmeleontidae, *Myrmeleon*, new species, China

---

The genus *Myrmeleon* Linnaeus, 1767, is worldwide in distribution with about 160 known species, 27 of which occur in the Palearctic and Oriental regions. Eleven species are known in China. *Myrmeleon bore* (Tjeder) and *M. formicarius* L. occur throughout most of China, *Myrmeleon immanis* Walker is found only in the Palearctic part of China, and the other eight species occur only in the Oriental Region of China. The new species described below were discovered in Fujian, Guangxi, Guizhou, and Hubei provinces and in Yunnan and Sichuan provinces, all in the Oriental Region.

*Myrmeleon* is characterized by the following characters: Vertex slightly to moderately raised; antennae with well defined club; wings narrow to moderately broad; posterior Banksian line in forewing usually strongly developed, anterior Banksian line rarely evident; posterior Banksian line in hind wing sometimes well developed; costal cells simple; Rs of forewing arises beyond cubital; forewing vein CuP originates at or very near basal crossvein; forewing vein 2A runs close to 1A for short distance, then bends at sharp angle toward 3A; basitarsus of hind leg shorter than apical tarsomere; female posterior gonapophyses

usually slender, sometimes very short, anterior gonapophyses rounded, spermatheca slender with duct usually coiled or convoluted; male ectoproct often expanded ventrally, sometimes simple, gonarcus arched, mediuncus usually well developed.

All types are deposited in the Insect Collection of the China Agricultural University, Beijing China.

KEY TO SPECIES OF *MYRMELEON*  
FROM CHINA

- 1 Head black, yellow or brown with distinct marks (similar to Figs. 2, 7) . . . . . 2
- Head black without distinct marks . . . . . 8
- 2 Forewing costal cells wider than high above radial sector . . . . . *M. punctinervis* Banks
- Forewing costal cells much higher than wide above radial sector (as in Figs. 1, 6) . . . . . 3
- 3 Tibial spurs of foreleg reaching to about middle of 2nd tarsomere . . . . . *M. immanis* Walker
- Tibial spurs of foreleg about equal to or shorter in length to basitarsus . . . . . 4
- 4 Head black, occiput black with a yellow annulus (Fig. 2) . . . . . *M. circulis*, n.sp.
- Head yellow with brown or black marks . . . . . 5
- 5 Pronotum without stripes except narrowly pale brown anteriorly . . . . . *M. alticola* Miller and Strange
- Pronotum with distinct yellow stripe (Fig. 7) . . . . . 6
- 6 Hind wing with 4 crossveins before origin of Rs (one specimen with hind wing with 5

- crossveins before origin of Rs) . . . . .  
 . . . . . *M. bimaculatus* Yang
- Hind wing with no less than 5 crossveins before origin of Rs (Fig. 6) . . . . . 7
- 7 Pronotum with two median yellow stripes intercrossed (Fig. 7) . . . . . *M. trigonois*, n.sp.
- Pronotum with one median yellow stripe . . . . . *M. fuscus* Yang
- 8 Tibial spurs of hind leg shorter than basitarsus . . . . . *M. wangi* Miller and Stange
- Tibial spurs of hind leg equal to or longer than basitarsus . . . . . 9
- 9 Tarsomeres pale brown except at apices . . . . . *M. heppneri* Miller and Stange
- Tarsomeres all black or dark brown except pale brown dorsally . . . . . 10
- 10 Tarsomeres with pale brown markings dorsally . . . . . 11
- Tarsomeres all black . . . . . 12
- 11 Male pilula axillaries small, knob not much wider than pedicel with setae about as long as knob; mesonotum usually all dark brown posterior . . . . . *M. taiwanensis* Miller and Stange
- Male pilula axillaries large, knob much wider than pedicel with matlike setae which are much shorter than knob; mesonotum pale brown posterior . . . . . *M. persimilis* Miller and Stange
- 12 Length no more than 33 mm . . . . . *M. bore* (Tjeder)
- Length more than 35 mm . . . . . *M. formicarius* Linnaeus

***Myrmeleon circulis* Rong and Wang,**  
**new species**  
 (Figs. 1–5)

**Diagnosis.**—Black; vertex inflated; frons, vertex black; occiput black with a yellow annulus. Pronotum black with a median stripe.

**Description.**—Male body length 32 mm, forewing 34 mm, hind wing 31 mm. Female body length 30–34 mm, forewing 35–39 mm, hind wing 33–36 mm.

**Head** (Fig. 2): Vertex inflated; frons, vertex black; occiput black with a yellow annulus; clypeus and labrum pale brown. Maxillary palpus yellow brown, terminal segment black; labial palpus yellowish, terminal segment long, spindle-shaped, black. Antenna short, less than 1/4 forewing length, slightly thickened apically, flagellum with about 34 segments, black, pale brown on base and on inner surface of scape.

**Thorax:** Pronotum (Fig. 2) slightly shorter than broad, black except a median stripe and lateral edges pale brown; setae on pronotum long, curved. Mesothorax with tergum black anteriorly, with long black setae; pale brown posteriorly with long white setae. Metathorax with soft white setae on tergum.

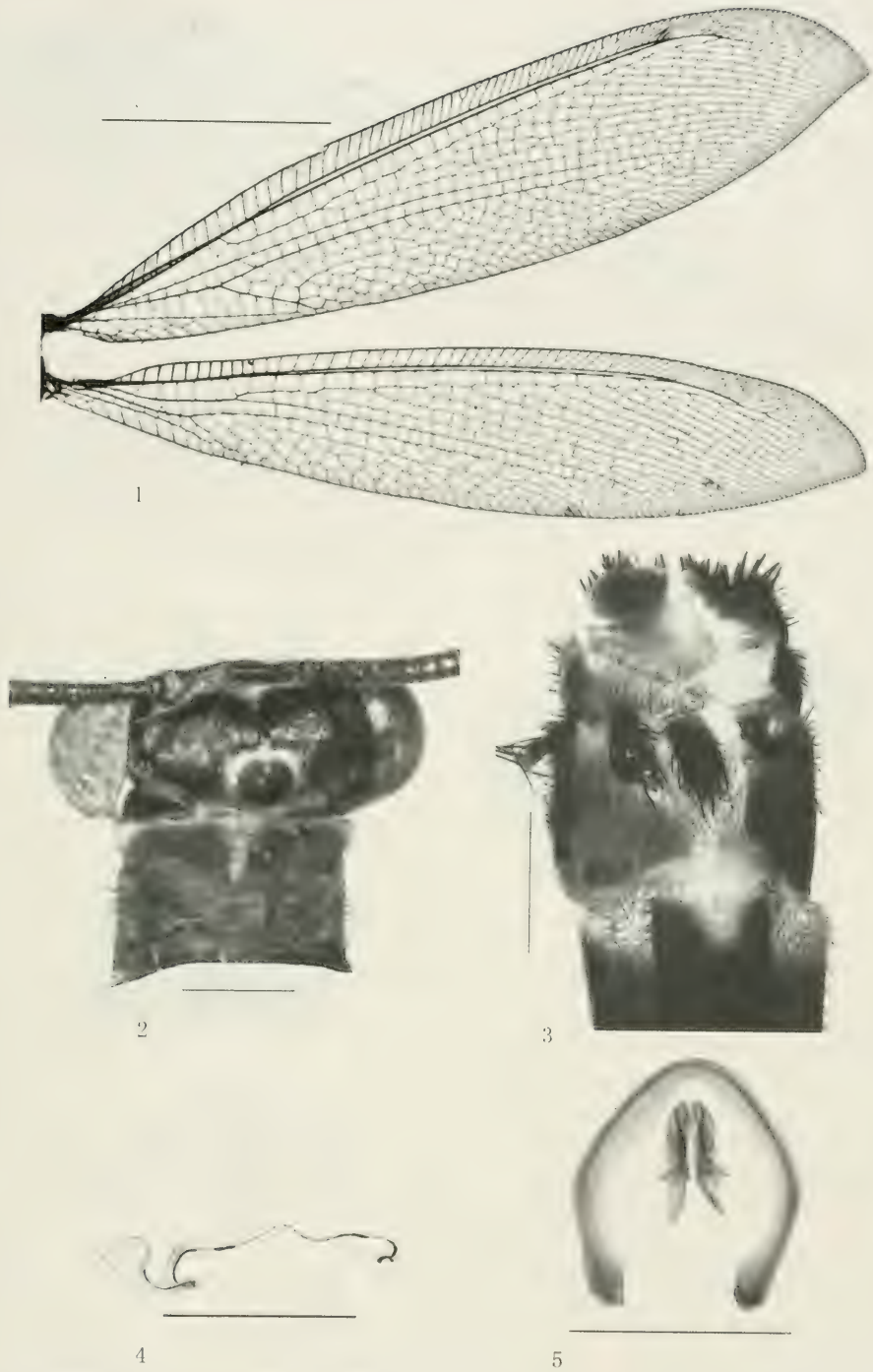
**Legs:** Foreleg with coxa yellow brown except black on outer surface, trochanter yellow brown, femur with black stripe and long white and short black setae, basally with a long sensory hair, tibia brown except yellow brown on outer surfaces, with white and black setae, tarsus brown, basitarsus yellow brown, about 2/3 length of distal tarsomere; tibial spurs about equal in length to basitarsus, claw about 2/3 length of tibial spur. Middle and hind legs similar to foreleg, hind leg without long sensory hairs.

**Wings** (Fig. 1): Hyaline, longitudinal veins mostly alternating pale and dark brown except some pale brown; nearly all crossveins pale brown; membrane without marking; stigma white, wider than high; posterior Banksian line conspicuous in both wings; hind wing with 5 crossveins before origin of Rs; pilula axillaries with knob much wider than long, with dense setae.

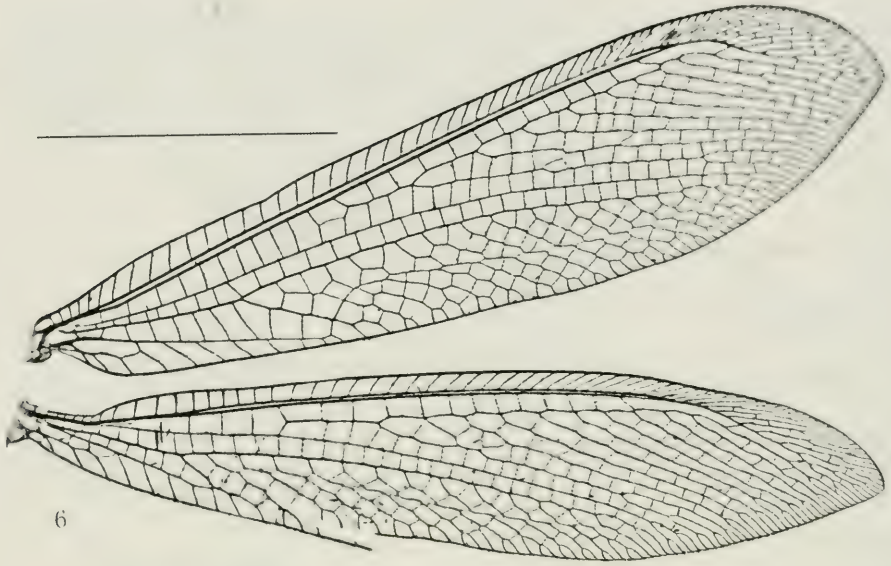
**Abdomen:** Black with apices of tergites and sternites pale black; shorter than forewing; ectoproct produced ventrally; parameres and mediuncus as in Fig 5.

**Female genitalia** (Fig. 3): Ectoprocts round with long, erect black setae; posterior gonapophyses digitiform, with long setae; anterior gonapophyses large; lateral gonapophyses separated from each other by narrow membranous area; pregenital plate small. Spermatheca (Fig. 4) curved, broad at base, slightly tapering toward apex.

**Type material.**—Holotype: ♂, Fujian: Jianzhen, Dongfeng, 28.07,1986, leg. M.Xie. Paratypes: 4 ♀, Fujian: Xishui, Jinjiang, 24~30,09,2000, leg. Q.Zh.Song; 1 ♀, Guangxi: Longzhou, Nonggang, 18,05,1982, leg. Ch.K.Yang; 1 ♀, Guizhou: Hezhang, 28,06,1978, leg. Unknown; 1 ♀, Fujian: Yanluxia, 15,05,1981, leg. Un-



Figs. 1-5. *Myrmeleon circulis*. 1, Wings. 2, Head and pronotum. 3, Female genitalia, ventral. 4, Spermatheca. 5, Male genitalia, caudal. Scale bars: 1 = 1 cm; 2 = 1 mm; 3-5 = 0.5 mm.



6



7



8



9



10

Figs. 6-10. *Myrmeleon trigonois*. 6, Wings. 7, Head and pronotum. 8, Female genitalia, ventral. 9, Spermatheca. 10, Male genitalia, caudal. Scale bars: 6 = 1 cm; 7 = 1 mm; 8 = 0.5 mm; 9-10 = 0.25 mm.

known; 1 ♀, Hubei: Zigui, Jiutouling (110 m), leg. J.Yao.

Remarks.—This species is similar to *M. wangi* but it can be separated from the latter by the stripes on the pronotum and the male genitalia. In *M. wangi*, the pronotum is nearly completely black except narrowly pale brown anteriorly and laterally, and the gonarcus is slightly curved (see fig. 25 in Miller et al. 1999); in *M. circulis*, the pronotum is black with a median stripe and the gonarcus is strongly curved.

Etymology.—The specific name refers to the black occiput with a yellow annulus.

***Myrmeleon trigonois* Rong and Wang,  
new species**  
(Figs. 6–10)

Diagnosis.—Black, vertex inflated, pale brown with several black spots, pronotum slightly shorter than broad, with two median intercrossed yellow stripes.

Description.—Male body length 31 mm, forewing 30 mm, hind wing 27 mm. Female body length 30 mm, forewing 35 mm, hind wing 32 mm.

*Head* (Fig. 7): Vertex inflated; frons black; vertex and occiput pale brown with several dark marks. Clypeus and labrum pale yellow brown. Maxillary palpus yellow brown, terminal segment brown; labial palpus yellowish, terminal segment long, spindle-shaped, dark brown. Antenna yellow on base and on inner surface of scape.

*Thorax*: Pronotum (Fig. 7) slightly shorter than broad, dark brown, with two median intercrossed yellow stripes, lateral edges pale brown; setae on pronotum long, curved. Mesothorax with tergum black anteriorly with long black setae, pale black posteriorly with long white setae. Metathorax with soft white setae on tergum.

*Legs*: Foreleg coxa, femur and tibia dark brown on outer surface, otherwise pale brown, femur with long white and shorter black setae, basally with a long sensory hair, tarsus brown, basitarsus yellow brown, about  $\frac{2}{3}$  length of distal tarsomere; tibial spurs about equal in length to basitarsus,

claw slightly curved, about  $\frac{3}{4}$  length of tibial spur. Middle and hind leg similar to forelegs, hind leg longer than foreleg without long sensory hairs.

*Wings* (Fig. 6): Hyaline, longitudinal veins mostly alternating yellow and brown; nearly all crossveins pale brown; membrane without marking; stigma white, wider than high; posterior Banksian line conspicuous in both wings; hind wing with 5 crossveins before origin of Rs; pilula axillaries with knob much wider than long, with dense setae.

*Abdomen*: Shorter than forewing, brown to black with apices of tergites and sternites pale brown; covered with short white hairs, terminalia with sparse short white and black setae, ectoproct produced ventrally; parameres and mediuncus as in Fig. 10.

*Female genitalia* (Fig. 8): Ectoprocts round with long erect black setae; posterior gonapophyses digitiform, with long setae; anterior gonapophyses round; lateral gonapophyses separated from each other by narrow membranous area; pregenital plate small. Spermatheca (Fig. 9) curved.

Type material.—Holotype: ♂, Yunnan: Deqin, Meilishi (2,200 m), 20.07.1982, leg. S.Y.Wang. Paratypes: 4 ♀, Sichuan: Batang (2,600 m), 14.08.1982, leg. L.Ch.Niu & S.Y.Wang; 1 ♂, Sichuan: Batang (2,500 m), 13.08.1982, leg. S.Y.Wang.

Remarks.—This species is similar to *M. formicarius*, but it can be separated from the latter by the stripes on the pronotum (Aspöck et al. 1980). In *M. formicarius*, the pronotum is black without a median yellow stripe, but the new species has two median intercrossed yellow stripes on the pronotum.

Etymology.—The specific name refers to the two triangular marks on the pronotum.

ACKNOWLEDGMENTS

We are very grateful to Mr. Qiongzhang Song, Mr. Ming Xie, Mr. Chikun Yang, Mr. Chunlai Niu, and Mr. Shuyong Wang for collecting specimens.

## LITERATURE CITED

- Aspöck H., U. Aspöck, and H. Hölzel. 1980. Die Neuropteren Europas. Goecke & Evers, Krefeld, Germany. Vol. I, pp. 281–311; Vol. II, pp. 182–210.
- Miller, R. B., L. A. Stange, and H. Y. Wang. 1999. New species of antlions from Taiwan (Neuroptera: Myrmeleontidae). *Journal of the National Taiwan Museum* 52(2): 47–78.